

US009636210B2

(12) United States Patent Hristov et al.

(10) Patent No.: US 9,636,210 B2 (45) Date of Patent: May 2, 2017

(54) INJECTION ZONE MARKERS FOR BIOMEDICAL IMPLANTS

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(*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 102 days.

(21) Appl. No.: 14/280,864

(22) Filed: May 19, 2014

(65) **Prior Publication Data**

US 2015/0327985 A1 Nov. 19, 2015

(51) **Int. Cl.**A61F 2/12 (2006.01)

A61B 8/08 (2006.01)

(2013.01); A61F 2250/0069 (2013.01); A61F 2250/0098 (2013.01)

(58) Field of Classification Search CPC

(56) References Cited

U.S. PATENT DOCUMENTS

4,636,213 A 1/1987 Pakiam 4,805,628 A 2/1989 Fry et al.

4,863,470	A	9/1989	Carter	
6,203,570	B1	3/2001	Baeke	
6,743,254	B2	6/2004	Guest et al.	
7,702,378	B2	4/2010	Bolan et al.	
8,320,993	B2	11/2012	Sirimanne et al.	
8,382,723		2/2013	Powers et al.	
8,382,724	B2	2/2013	Maniar et al.	
2003/0144734	A1	7/2003	Dreschnack et al.	
2003/0149481	A1	8/2003	Guest et al.	
2004/0073107	A1	4/2004	Sioshansi et al.	
		(Continued)		

FOREIGN PATENT DOCUMENTS

WO WO 98/19713 A1 5/1998 WO WO 03/034894 A2 5/2003 (Continued)

OTHER PUBLICATIONS

Couture et al.: "Reflection from Bound Microbubbles at High Ultrasound Frequencies"; IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, (2009), pp. 536-545, vol. 56(3).

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(57) ABSTRACT

A mammary implant and method of making are provided herein. The implant includes an outer shell configured to retain fluid therein, an injection element coupled to the outer shell and adapted to receive therethrough an injection device for injecting fluid into the outer shell, and an injection marker zone made of a material having ultrasonically detectable markers incorporated therein. The markers are a plurality of microcavities that are located relative to the injection element so that, when ultrasonically detected, such detection indicates a location of the injection element.

12 Claims, 12 Drawing Sheets

